

# THE AEROPLANE SPOTTER

FOR THE ALERT

3<sup>D</sup>

WEEKLY

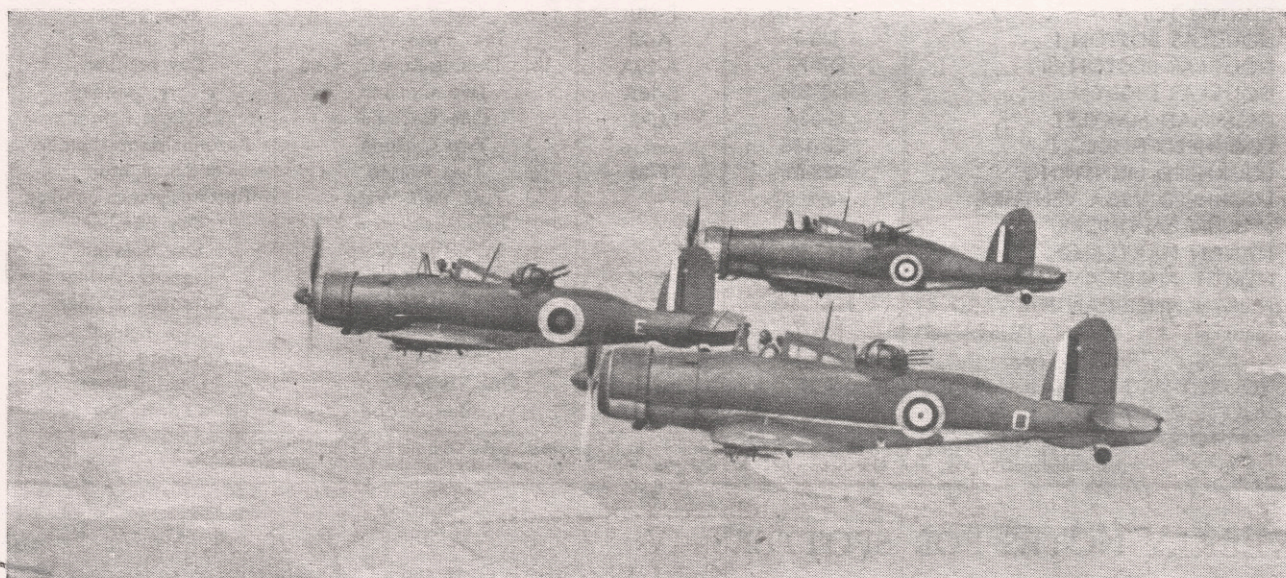
EVERY THURSDAY

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THE HEARKERS' CLUB BULLETIN

Edited by PETER G. MASEFIELD

M.A. (Eng.) Cantab; A.F.R.Ae.S.  
Technical Editor of "THE AEROPLANE."



["Aeroplane" photograph]

NAVAL AIR POWER—BLACKBURN ROC SHORE-BASED TWO-SEAT FIGHTERS OF THE FLEET AIR ARM.

WITH this issue THE AEROPLANE SPOTTER completes the first month of its existence. That is not long enough for the full reaction of its readers to appear or for the individual character of a paper to be finally determined. Yet it has been long enough to show that THE AEROPLANE SPOTTER does meet an urgent need and that it is welcomed by those who are concerned with the vital subject of aircraft recognition.

Our request for constructive comments has resulted in a flood of letters which prove the keenness of official and unofficial spotters of all types—whether in one of the Services, in Industry or interested privately. The chief request is for still more detailed and comprehensive information of all kinds. In particular a constant demand for more photographs and more silhouettes of the latest aeroplanes in the R.A.F., in the Luftwaffe and in the Regia Aeronautica is advanced with all the impatience of real enthusiasm.

One of the greatest problems of the moment, in producing any periodical, is the acute paper shortage. That is the reason why THE AEROPLANE SPOTTER must be limited at present to eight pages. Those pages are packed as closely as possible with information selected to cater for the wide range of spotters who rely on it—from the newest "Jim Crow" who has never attempted to identify an aeroplane to the Air Force veteran who has flown more than 100 types.

The paper shortage, too, places limitations upon both the scope of the text and the acceptance of advertisements. THE AEROPLANE SPOTTER is not produced to

make profit but to serve a cause and for this purpose we shall utilise all the facilities available to us. Thus the maximum of information will always be crammed into the minimum of space.

For that reason, unfortunately, we cannot accede to the request of many that photographs should be printed only in such a manner that they do not back on to one another, so that each can be cut out without mutilating another. In this connection a point worth noting is that at the end of each six months, copies of THE AEROPLANE SPOTTER can be bound with an index to provide a permanent record.

Within these limitations the development of the paper must be conditioned by the demands of its readers. At present we believe that we have hit on a fair division of space to cover the information required. In particular we hope to illustrate and describe new types in detail as and when the interests of "security" permit the Censor to release them.

Finally we would like to thank all those who have written so kindly about the new publication and have shown so much interest in its future. Some people may have found difficulty in buying the paper casually from newsagents as no unsold periodicals can now be returned to the publishers. Therefore if you want to take THE AEROPLANE SPOTTER regularly the best course is either to place a definite order for it with your local newsagent or to order it direct from Temple Press Ltd. By this direct subscription it will be sent by post at the rate of 4s. 4d. for three months or at a corresponding rate for longer periods.



NEWS OF THE WEEK

NAMES have been officially approved by the Air Ministry and the Admiralty for most of the types of military aeroplanes which are arriving from the United States in increasing numbers—by sea and by air. The following is the list as it stands at the moment with the new R.A.F. and F.A.A. names, and equivalent American titles:—

MAKER AND BRITISH DESIGNATION	AMERICAN NAMES AND NUMBERS		NUMBER AND TYPE OF MOTOR(S)	TYPE
	MAKER'S	U.S. ARMY OR NAVY		
BELL CARIBOU .. .. .	P-400 Airacobra	P-39	One Allison	S.S. fighter
BREWSTER BERMUDA .. ..	138	SBA-1	One Cyclone	Fighter - dive bomber
BREWSTER BUFFALO .. ..	439	F2A-2	One Cyclone	S.S. fighter
CONSOLIDATED CATALINA ..	Model 28-5	PBY-5	Two Twin-Wasp	G.R. flying-boat
CONSOLIDATED LIBERATOR ..	Model 32	B-24	Four Twin-Wasp	Heavy bomber
CURTISS CLEVELAND .. ..	Helldiver 77	SBC-4	One Cyclone	Dive bomber
CURTISS KITTIHAWK .. ..	Hawk 87	P-46	One Allison	S.S. fighter
CURTISS MOHAWK .. .. .	Hawk 75-A	P-36A	One Twin-Wasp	S.S. fighter
CURTISS TOMAHAWK .. ..	Hawk 81-A	P-40A	One Allison	S.S. fighter
DOUGLAS BOSTON I .. ..	DB-7	A-20	Two Twin-Wasp	Day bomber
DOUGLAS BOSTON III .. ..	DB-7B	A-20A	Two Double-Row Cyclone	Day bomber
DOUGLAS DIGBY .. .. .	DB-280	B-18A	Two Cyclone	Heavy bomber
GRUMMAN MARTLET .. ..	G-36A	F4F-3	One Cyclone	S.S. fleet fighter
LOCKHEED HUDSON .. ..	EB-14B	—	Two Cyclone	Reconnaissance-bomber
LOCKHEED LIGHTNING ..	322-61	P-38	Two Allison	S.S. fighter
LOCKHEED VEGA VENTURA ..	Vega 37	—	Two Twin-Wasp	Reconnaissance-bomber
MARTIN BALTIMORE .. ..	187	—	Two	Day bomber
MARTIN MARYLAND .. ..	167-B4	—	Two Twin-Wasp	Day bomber
NORTH AMERICAN HARVARD I	NA-16-1E	BC-1	One Wasp	Advanced trainer
NORTH AMERICAN HARVARD II	NA-16-3	BC-1A	One Wasp	Advanced trainer
NORTH AMERICAN MUSTANG	NA-73	—	One Allison	S.S. fighter
NORTH AMERICAN YALE ..	NA-64	BT-14	One Whirlwind	Advanced trainer
VOUGHT-SIKORSKY CHESAPEAKE	V-156	SB2U-2	One Twin-Wasp Jr.	Dive bomber
VULTEE VENGEANCE .. ..	72	—	One Allison	S.S. fighter

Several aeroplanes, such as the Boeing B-17B (the so called "Flying Fortress"), the Consolidated Models 28-5A and 31, the Douglas DB.8A-5, the Northrop A-17A, and the Vultee Vanguard, still remain to be officially named.

WEEKLY NOTES FOR SPOTTERS—IV

By R. A. Saville-Sneath  
(Member of the Observer Corps and a Founder Member of the Harkers' Club)

THE HAWKER HURRICANE, the Hawker Henley and the Phillips and Powis Miles Master are generally acknowledged by Spotters to be a troublesome trio. Fortunately the Hurricane as a type predominates and if either a Henley or a Master is occasionally identified as a Hurricane the consequences are not likely to be serious. As a rule the only injury is to the Spotter's self-esteem when a neighbouring post informs him that the "Hurricane" upon landing at XYZ proved to be a Henley.

Each of these types has distinctive points when seen at right angles and in good visibility. These conditions can rarely be relied upon, hence the trouble experienced in practical spotting and frequently noticed in proficiency tests.

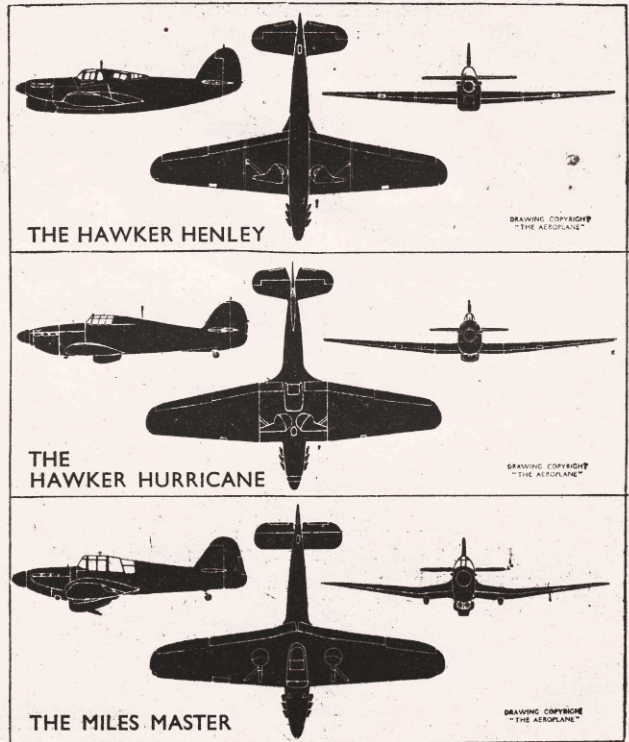
THE MASTER is perhaps the least troublesome of the three. The inverted gull wing is sufficiently marked to distinguish it clearly in the head-on and three-quarter views. The large, rather angular single fin and rudder, the coupé type of cockpit and the deep radiator in line with the leading edge are equally distinctive in the side view.

The plan view causes most of the confusion. Assuming that neither the outline of the radiator nor the backwards retracting undercarriage can be distinguished, the shape and position of the tail should provide the correct answer. The tail is almost rectangular, in characteristic Miles fashion, with rounded tips. Unlike the Hurricane and the Henley, it has no "cut-away," because the large rudder is mounted well behind and clear of the elevator.

THE HENLEY, with its long ducted radiator tunnel immediately under the motor, well forward of the wing, and its curious many-panelled two-seat cockpit, is likely to be confused with the Hurricane only in the plan or head-on views. Unfortunately for the Spotter, both aeroplanes possess the characteristic Hawker rounded tail unit with cut-away elevator. The span of the Henley is some 8 ft. greater than that of the Hurricane or the Master, but, as the other dimensions are roughly proportionate, the difference in size is not usually apparent.

The mid-wing and the tail plane of the Henley are of slightly higher aspect ratio than those of the Hurricane, but the difference between the ratios is too fine to be judged with confidence. On the other hand, the difference in the

outline of the two wings, though slight, is recognisable and is more easily remembered.



Further points of distinction between the Henley, the Hurricane and the Master will be discussed by Mr. Saville-Sneath next week.

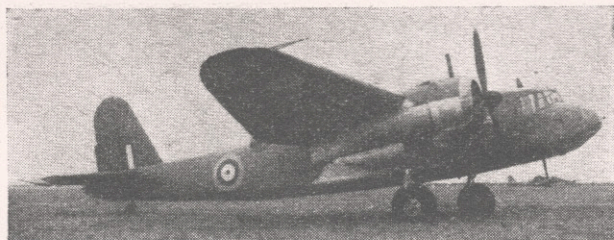


## AIRCRAFT IN THE NEWS—IV

## THE BLACKBURN BOTHA I

**H**IGH WING monoplanes are still a rarity in the Royal Air Force although the modern trend is for wings to go up. Thus the new Blackburn Botha I reconnaissance and torpedo bomber (two 930 h.p. Bristol Perseus X motors) is in the forefront of fashion.

There seems to be some confusion about the correct pronunciation of its name. This should be with a long "o" as



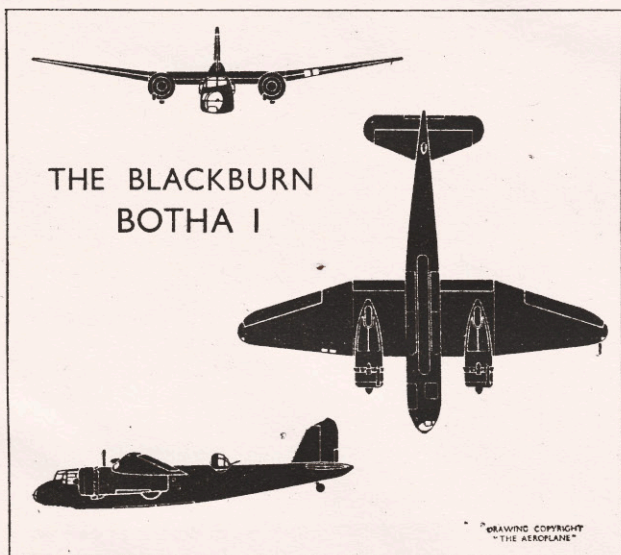
in "oath" and not a short "o" as in "bother." Correctly it is pronounced "Boater" in Afrikaans but "Boather" (the "th" as in pith) is the accepted English form.

The Botha is a two-motor high-wing monoplane with single fin and rudder and normal undercarriage retracting into the motor nacelles. It is of all-metal stressed skin construction.

Details of armament and performance are not available for publication but photographs indicate that a curiously pointed gun turret is carried on top of the fuselage mounting twin guns. The wing span of the Botha is one foot greater than that of the Beaufort.

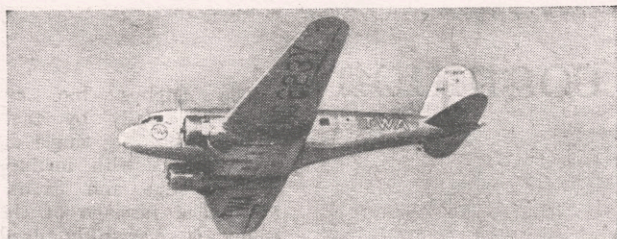
**DIMENSIONS.**—Span, 59 ft. 0 in.; length, 50 ft. 11½ ins.; height, 18 ft. 3 ins.

**POINTS OF RECOGNITION.**—High wings with very sharp taper on trailing edge of outer panels. Rectangular centre section. Wide fuselage with fairly long nose and lop-sided transparent panels in front for bomb-aiming, offset to starboard. Tall single fin and rudder. Big motor nacelles underslung and ending in vertical knife-edge. Undercarriage retracts into nacelles leaving half of each wheel exposed. Fixed tail wheel.



## CIVIL IDENTIFICATION—IV

## THE DOUGLAS DC-2



**T**HOUGH no longer in production, the Douglas DC-2 14-seater two-motor transport is still used on many civil air routes throughout the World. It first flew in 1933 and set a new fashion for both civil and military aeroplanes which was adopted all over the World and can be seen in such types as the He 111 and the Ju 86. The DC-2 was followed in 1936 by the DC-3, an enlarged and improved version. One DC-2 (two 875 h.p. Wright Cyclone GR-1820-F52 motors) belonging to K.L.M. is used in Great Britain for communications duties.

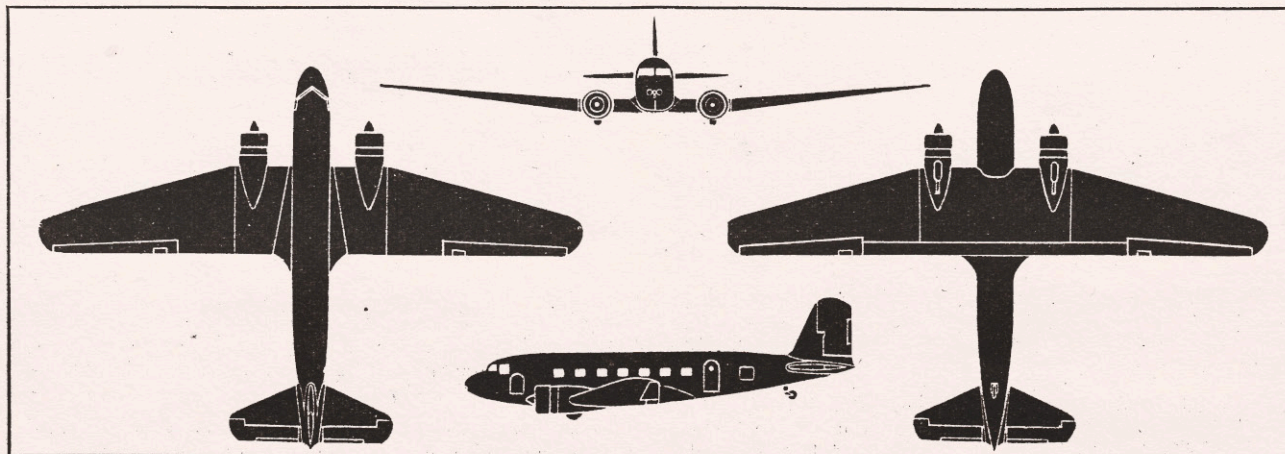
The Douglas DC-2 is a low-wing cantilever monoplane with swept-back tapered wings, cylindrical fuselage and tall single fin and rudder. It is of all-metal construction with stressed metal covering. The undercarriage retracts forwards into the motor nacelles, leaving part of the wheels protruding.

**DIMENSIONS.**—Span, 85 ft.; length, 61 ft. 11½ ins.; height, 16 ft. 3¼ ins.; wing area, 939 sq. ft.; aspect ratio, 7.7.

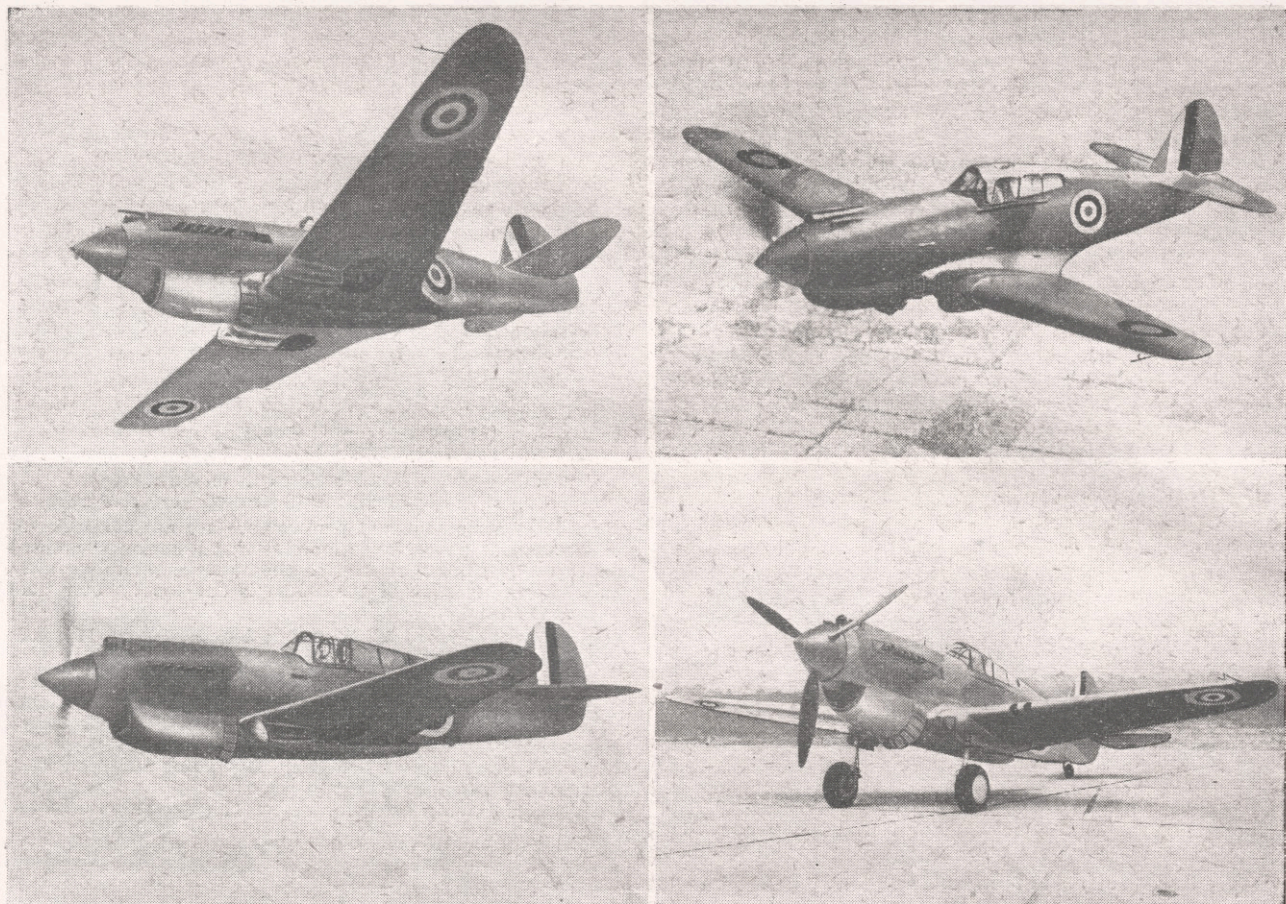
**WEIGHTS.**—Empty, 12,010 lb.; loaded, 18,200 lb.

**PERFORMANCE.**—Top speed, 213 m.p.h.; range, 1,085 miles at 200 m.p.h. at 8,000 ft.; initial climb, 1,090 ft. per min.; service ceiling, 23,600 ft.

**POINTS OF RECOGNITION.**—Tapered low wings with swept-back leading edge and straight trailing edge. Round tips and marked dihedral. Deep cylindrical fuselage. Radial motors set into the wings at ends of centre section. The most noticeable differences between the DC-2 and DC-3 are the wing-tips, the nose of the fuselage and the tail unit. On the DC-2 the wing-tips are round whereas those of the DC-3 are pointed; the nose of the DC-2 is slightly longer and not so pointed, and has two landing lights instead of one. The large fin on the DC-2 is not extended along the fuselage as on the DC-3 and has a more upright appearance..





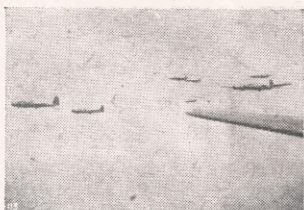


**OUT FOR SCALPS**—Curtiss Tomahawk single-seat fighters built in the United States and now in service with the R.A.F. Fighter Command in Great Britain. The Tomahawk is identical with the Curtiss P-40 and the Curtiss Hawk 81A, its designation in America. Powered with the 1,090 h.p. Allison V-1710 liquid-cooled motor, the Tomahawk has a top speed of about 330 m.p.h. at 15,000 ft.

## Aircraft Recognition

**A**FORMATION of Boeing AB-17B heavy bombers (four 1,200 h.p. Wright Cyclone GR-1820-G205A motors) and a formation of Douglas Digby bombers (two 1,200 h.p. Wright Cyclone GR-1820-G205A motors) were last week's recognition problems.

The Boeings can be recognised by their big single fins and rudders rising from the particularly thin after portion of the fuselage. The leading edge of the fin is straight, the top of the trailing edge of the rudder distinctly curved. The four motors and thin cantilever low wing can be seen in the machine on the right. On the left the narrow cylindrical fuselage is recognisable.



**LAST WEEK'S PROBLEM**—(Left) B-17Bs, and (Right) Digbys

The Digbys too are betrayed chiefly by their characteristic big single fin and rudders with inclined leading edge and flattish top. The fuselage of the Digby is noticeably deep with a projecting nose and receding "chin." The low wings are identical with those of the Douglas DC-3 transport and thus have the pronounced features of sharply swept-back leading

edge and straight trailing edge.

Boeing B-17Bs are now arriving in this country by air across the Atlantic and the Douglas Digbys of the Royal Canadian Air Force may be seen in this country before long.



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**FOR IDENTIFICATION IV**—Two more photographs to give practice in the recognition of Allied and enemy aeroplanes. What they are and notes on their characteristics will be published with two more photographs next week.



# THE HEARKERS' CLUB

Members of the Observer Corps wishing to form new Harkers' Clubs should consult their Observer Group Officers. Mr. H. James Lowings Organising Secretary, 34, High Street, Guildford, will be glad to advise on any problems which arise about the formation of new Clubs. Hon. Secretaries of Harkers' Clubs are asked to send their reports of Club Meetings and Forthcoming Events direct to The Editor. "THE AEROPLANE SPOTTER," in small and frequent doses for inclusion in this page.

## HEARKERS' CLUB No. 2 (SHIRLEY)

Hon. Sec.: T. C. Fleming, 42, Park Lane, Wallington.

OUR first meeting held in 1941 was well attended. Mr. R. A. Saville-Sneath gave a most instructive and useful talk from an Observer's point of view on "Cloud Formation in Relation to Height," which was much appreciated. Mr. J. H. Stevens, Jr., who was to speak on "The Aeroplane as a Family," was unfortunately unable to be present, but kindly sent his lecture along and this was read for him by Mr. R. G. Brown, who put it over in excellent style.

SPoon COMPETITION.—This was won by Mr. C. G. Stevens, Z.4, with a possible 31. D. Jenkins, Bromley Centre, also obtained 31 points—as usual.

The following members qualified as IIIrd-class Harkers obtaining 25 or more points out of 31 possible:—

A. E. Everitt, Y.1; W. J. Pett, Y.1; J. W. Falconer, Y.2; M. S. Jackson, Z.3.

## HEARKERS' CLUB No. 4 (LIVERPOOL)

Hon. Sec.: P. Sugden, 4, Bath Street, Liverpool.

THE second meeting of the Club was held on Saturday, Jan. 4, at the A.R.P. headquarters in Hood Street, Liverpool. The chair was taken by Major Campbell (H.2), who is our new Chairman, in the place of Hutton, who is now in the R.A.F.

The first item was an eliminating contest for the nine people who tied for the Spoon in December. A. Mowe (J.2) won by two points from A. H. Knox (J.3). This eliminating competition gave a headache to the Competition Sec. as well as the entrants. The January Silver Spoon went to Sgt. Cocker who romped home. Another nine Observers became IIIrd-class Harkers.

A talk was given by Sqdn. Ldr. Donaldson on his experiences as a fighter pilot which held his audience enthralled for an hour and a half. No mean performance indeed.

The next meeting will be held on Feb. 1 when we hope to have a talk from the Coastal Command.

ELIMINATING TEST FOR LAST MONTH'S SILVER SPOON (only two out of the nine competitors turned up):—

J.2.—A. Mowe, 45 out of possible 56 points. J.3.—A. H. Knox, 43.

THIS MONTH'S SILVER SPOON:—

Sgt. J. A. Cocker, A.A. School (41 out of 41); K.4.—J. Leigh (39); K.4.—W. Rimmer (37); K.4.—E. Appleton (36½); H.2.—N. H. Bushby (36½); H.2.—H. J. Beausire (36½); K.4.—D. J. Proctor (32).

The following have now qualified as IIIrd-class Harkers (25 out of 31):—

K.4.—T. Rimmer (28); K.4.—W. Rimmer (30); K.4.—D. J. Proctor (31); H.1.—G. Nicholson (29½); H.1.—C. W. Reed (30½); J.2.—A. J. Marsh (26½); H.2.—H. J. Beausire (27½).

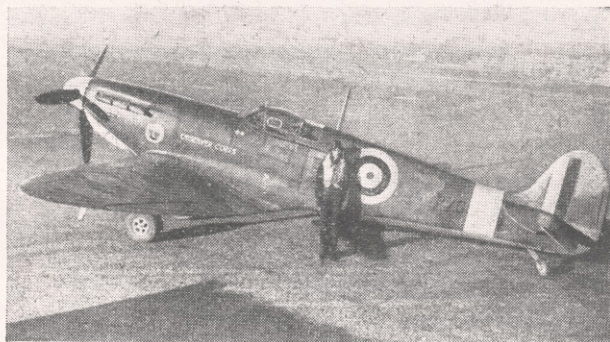
## HEARKERS' CLUB No. 7 (SOUTHEND-ON-SEA)

Hon. Sec.: E. H. McLean, 109, Broadway, Leigh-on-Sea.

THE second monthly meeting was held at the Civic News Cinema on Sunday, Jan. 5. Films and projector were kindly lent by the R.A.F. Station, Hornchurch, and an interesting and instructive programme was carried through in addition to the test for Harkers' Certificates.

Members of P Post were made very welcome and they did well in their first attempt for IIIrd Class Certificates. The membership of No. 7 has now increased to 39.

Members are scattered over a wide area and it is difficult for many to get to Southend for the monthly meeting. Mr. Sylvester, Chairman, and Mr. McLean, Hon. Sec., and officials of the Club therefore arrange visits to the districts of the various Posts with slides and lantern to give talks on the comparison of similar types and to hold tests. Meetings have been held at 01 and 02 and a visit to the P Post is forthcoming.



THE OBSERVER CORPS SPITFIRE—The Supermarine Spitfire MK I paid for by the Spitfire Fund of the Observer Corps. This machine is flown by Sqd. Ldr. D. O. Findlay, D.F.C., the British Olympic Hurdler, who commands a Squadron which has shot down more than a hundred enemy aeroplanes.

Since the last report the following have qualified for Harkers' IIIrd Grade Certificates:—01.—C. Bright, E. A. Jefferies, R. J. Matthews and E. D. Clements; 02.—W. E. Hills, R. C. Sessions, F. R. Stott and H. E. Chambers; 04.—G. H. Fender, T. B. Newton, J. R. C. Thatcher, W. A. Pethick, A. Whybrow, A. C. Miller, O. T. French, D. H. Beech and A. J. Green; P2.—R. H. Johnson, C. E. Anderson and R. B. Key; M3.—W. E. Blowers. Spoons have been won by A. C. Reynolds (his second), G. H. Fender, both of 04, and W. E. Hills of 02.

The high state of efficiency in recognition obtained by these members is shown in that ties occurred in two cases with the full number correct and ten more slides had to be shown for only two seconds each before the winner could be determined. A special mention must be made of the effort of Mr. T. B. Newton of 04 who tied on two occasions and was unlucky not to win in the last round.

Monthly meetings are held on the first Sunday in each month at the Civic News Cinema, Southend-on-Sea, at 10 a.m. and at the next one on Feb. 2 it is hoped to arrange a talk by a leading authority followed by a test for Certificates and spoon competition.

## HEARKERS' CLUB No. 12 (CAMBRIDGE)

Hon. Sec.: H. J. Rumsey, 29, Chesterfield Road, Cambridge.

THE inaugural meeting was held at Chesterton Senior School, Cambridge, on Jan. 12. Mr. H. James Lowings, Guildford, kindly came along and gave a very interesting talk to an attendance of about 50. Three films were to be shown, but unfortunately the projector failed at the last moment. An epidiascope came into use and filled the breach.

The following officers were elected:—

President: Major E. Grant-Dalton, O.G.O.

Chairman: H. Newman (Centre).

Hon. Sec.: H. J. Rumsey (Centre).

Hon. Treasurer: F. Unwin (C.I.).

Hon. Auditor: G. Dean (Centre).

Hon. Attend. Officer: Capt. W. H. Ockleston.

Hon. Comp. Officer: E. C. Chamberlain (K.3).

In the Grade III test the following seven members passed:—K.3.—E. C. Chamberlain; B.3.—R. Clark; D.3.—R. Doe; K.3.—J. W. Kerridge; (Centre) H. J. Rumsey; (Centre) J. E. Vickery; C.2.—L. Yarrow.

The meeting concluded with a vote of thanks to Mr. H. James Lowings.

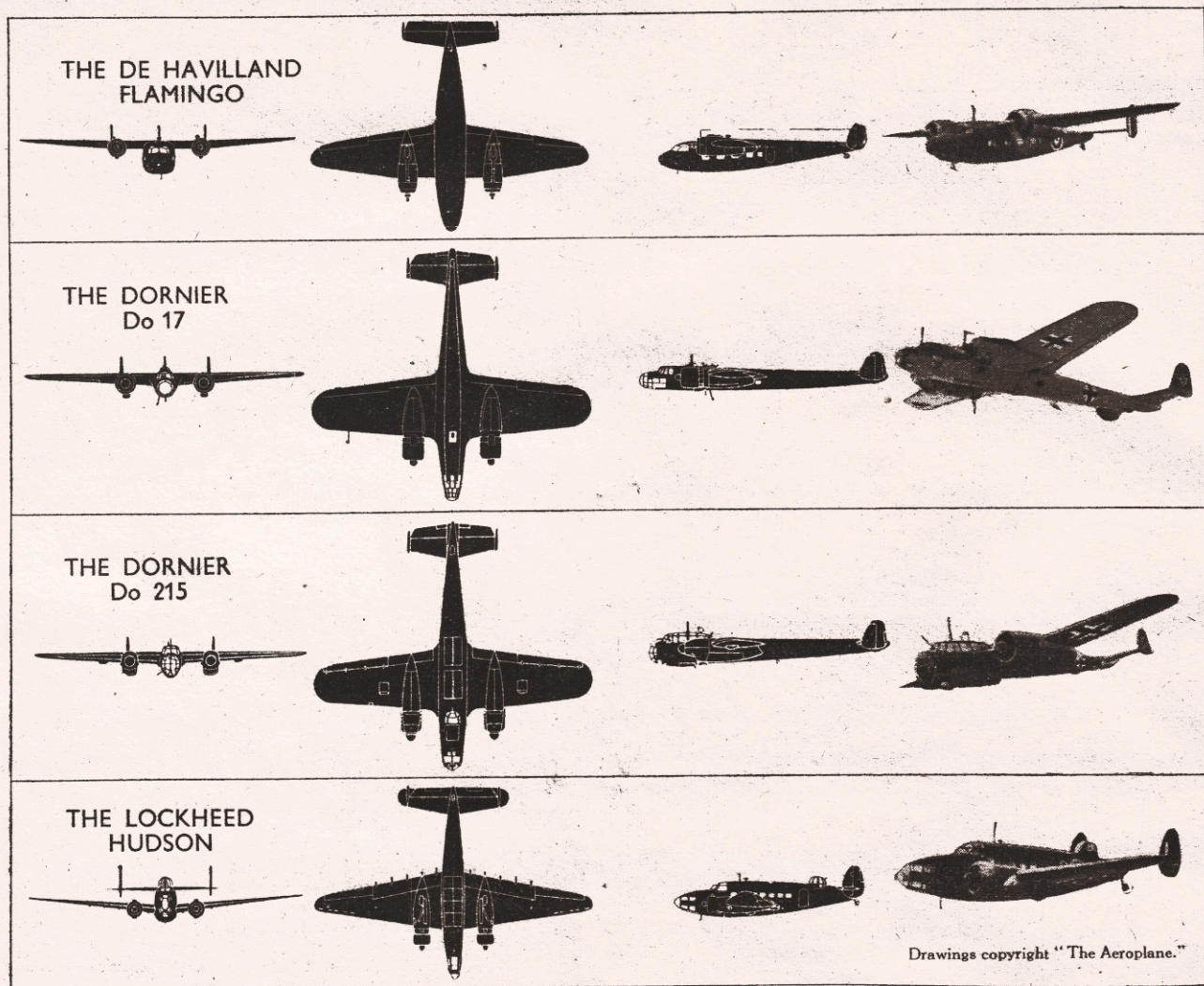
## FORTHCOMING EVENTS

Jan. 25.—Guildford.—Harkers' Club No. 1 (Guildford).—Annual General Meeting at Guildford Technical College, Stoke Park, and talk by Peter Masefield on "The Evolution of the Single-seat Fighter, 1913-1941."—14.30 hrs.  
Jan. 26.—Hendon.—Harkers' Club No. 3 (Hendon).—"The Aeroplane as a Family," by J. H. Stevens, Jnr. Third Grade Test and Inter-post Recognition Competition.—Hendon Public Library.—10.30 hrs.

Feb. 9.—Shirley.—Harkers' Club No. 2 (Shirley).—Talk by R. A. Saville-Sneath on "Cloud Formations in Relation to Height." Second Grade Test.—10.00 hrs.  
Feb. 9.—Bishops Stortford.—Harkers' Club No. 3 (Hendon).—Talk by Peter Masefield on "The Evolution of the Single-seat Fighter, 1913-1941," and by J. G. M. Miller on "New Types of Aeroplanes in the R.A.F."—At the Falcon Hotel.—10.00 hrs.



## AIRCRAFT COMPARISON—IV. SOME TWIN-TAIL TYPES



Drawings copyright "The Aeroplane."

**FRIENDS AND ENEMIES.**—Drawings and photographs of four types which are sometimes confused. All have twin fins and rudders but are otherwise distinctive. Differences in scale are not essential to the spotter for this purpose so that each is reproduced here to show the maximum detail. The Do 17 and Do 215 are both in service with in-line and radial motors.

## THE SPOTTER'S GLOSSARY OF AERONAUTICAL TERMS

**ALTITUDE.**—Height. The word altitude should be used with discretion. Thus "high altitude" means merely "high height," and should be avoided.

"Maximum Power Altitude" is the lowest height at which full throttle should be used at maximum permissible r.p.m. of an aero-motor. For a supercharged motor it is the greatest height at which the rated boost pressure can be maintained at max. permissible r.p.m.

"Rated Altitude"—preferably "rated height"—is the lowest height at which full throttle should be used at normal r.p.m. For a supercharged motor it is the greatest height at which the rated boost pressure can be maintained at normal r.p.m.

**ALTO-CUMULUS.**—Clouds of average height (between 7,000 and 20,000 ft.), usually in the form of a layer made up of small masses arranged regularly in groups, lines or rolls.

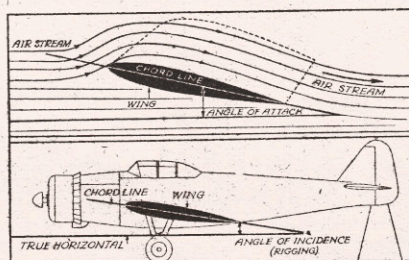
**ALTO-STRATUS.**—Clouds of average height (between 7,000 and 20,000 ft.), usually in the form of a bluish-grey fibrous veil.

**AMPHIBIAN** (in U.S.A. spelt "amphibion")—An aeroplane designed for taking off from and alighting on

both land and water. Examples:—Supermarine Walrus, Grumman G-21B., Consolidated Model 28-5A.

**ANEMOMETER.**—An instrument for measuring the speed of the wind.

**ANGLE OF ATTACK.**—The angle between the chord line of an aerofoil and the relative airstream, no matter what the attitude of the aeroplane. This is also the **TRUE ANGLE OF INCIDENCE.**



**ANGLE OF INCIDENCE (RIGGING).**

—The angle between the chord line of the mainplane of an aeroplane and the horizontal when the aeroplane is in the specified "rigging position" on the ground. It should not be confused with the True Angle of Incidence. See **ANGLE OF ATTACK.**

**ANGLE OF DOWNWASH.**—The angle through which the airstream relative to the main axis of the aeroplane is deflected by an aerofoil.

**ANODIC TREATMENT.**—A treatment for metal parts of aeroplanes whereby a protective coating of oxide is imposed by electrolytic action. The treatment takes about one hour to complete.

**ANTENNA.**—Aerial wire for radio communication. See **AERIAL.**

**ANTICER.**—A device for preventing the formation of ice on aircraft, usually in the form of a liquid paste. Should not be confused with De-icers, which are devices for removing ice when it has formed.

**ANTICYCLONE.**—Refers to weather. A region of relatively high barometric pressure in which the pressure is highest at the middle. The winds circulate clockwise around this centre in the Northern Hemisphere and anti-clockwise in the Southern Hemisphere. Anticyclone is the opposite of **DEPRESSION.**

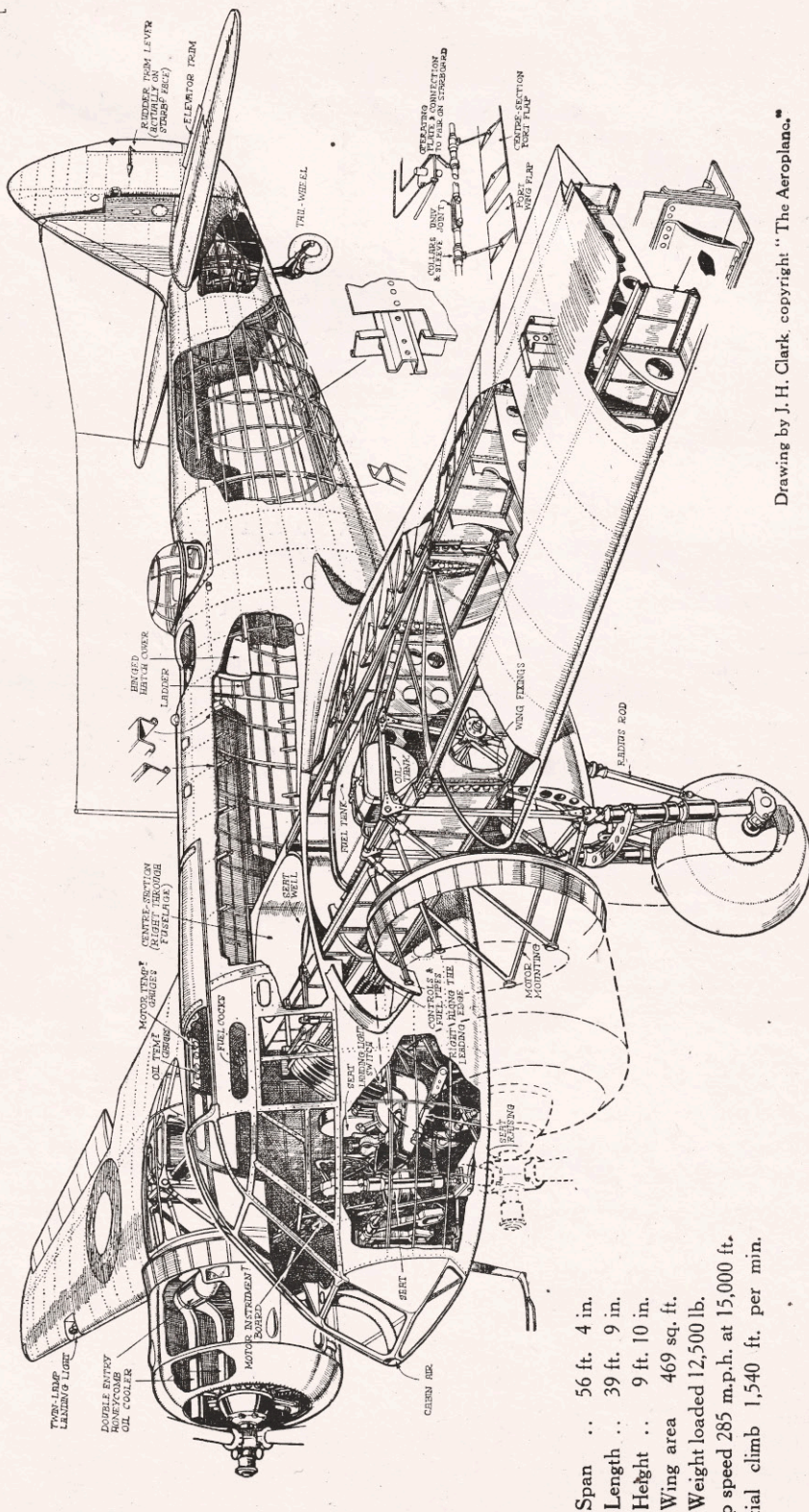
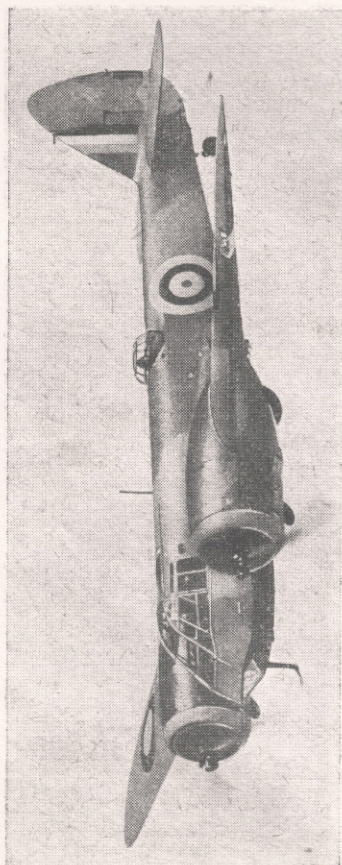
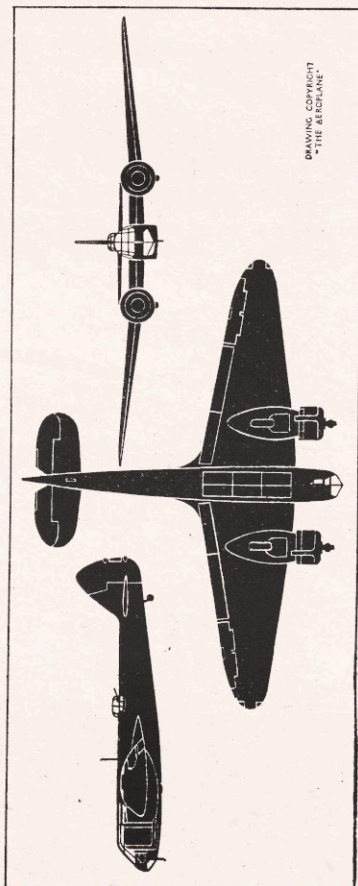
**ANTI-DRAW WIRES.**—Wires or cables, usually in the inside of non stressed-skin wings, which resist forces set up by the drag of the aeroplane as it flies.

(To be continued.)



## AEROPLANES IN DETAIL—IV

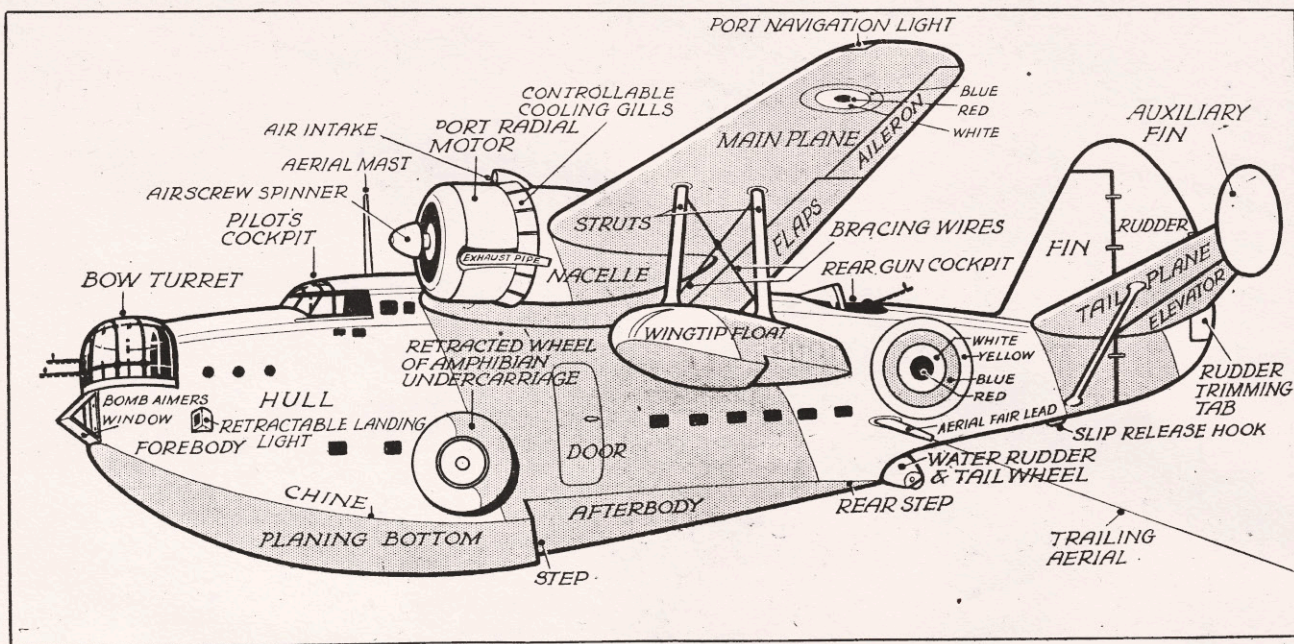
THE BRISTOL BLENHEIM MK. I FIGHTER-BOMBER (two 840 h.p. Bristol Mercury VIII motors)



Drawing by J. H. Clark, copyright: "The Aeroplane."



# BY THESE NAMES SHALL YE KNOW THEM



AERONAUTICAL TERMS III.—The parts of a typical two-motor amphibian flying-boat.

## IDENTITY PROBLEMS

### Mental Aerobatics—IV

MY first is a wing both pointed and wide,  
My next seven windows arranged down each side,  
My third are two motors—both radials they be,  
And often I'm seen flying over the sea.  
My fourth is a tail with a couple of fins,

My fifth is a turret which fires as it spins!  
Of my whole you must take heed and welcome some more,  
For I represent aid from a far distant shore.

SOLUTION TO MENTAL AEROBATICS—III.—A. W. Whitley.

## An Aeronautical Crossword

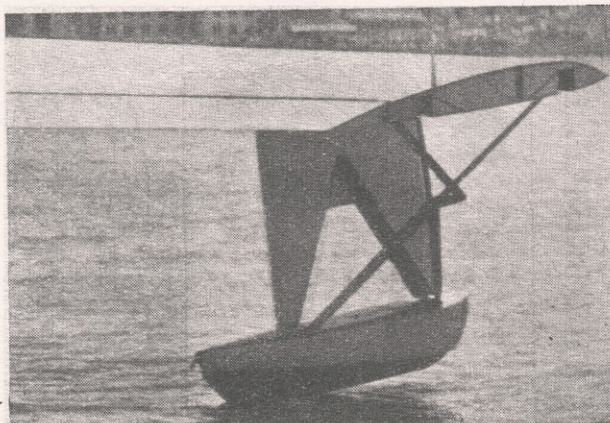
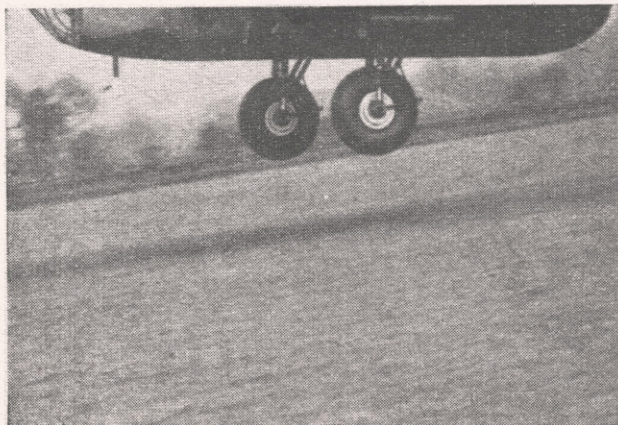
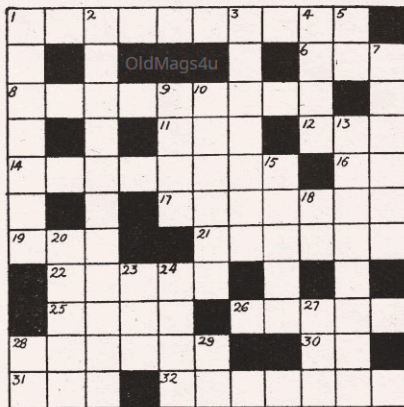
### CLUES

#### Across

1. R.A.F. Duke.
6. Tool.
8. Keeps the pilot warm.
11. And so on.
12. Headgear.
14. Aircraft component.
16. Quadrantal point.
17. Origin of new aircraft.
19. Affirmative.
21. Essential war-time service.
22. Found in aeroplanes.
25. Built London.
26. Parts of flying-boats.
28. Obsolete Hawker type.
30. Part of the Army.
31. Compass point.
32. Fighter.

#### Down

1. An avenger from Coventry.
2. Lebensraum.
3. Sugar.
4. Taken in court.
5. North-west.
7. Superlatively tardy.
9. Require.
10. Do this to a 'plane's skin.
13. Lead Anne (anag.).
15. Recess.
18. Anson's duty.
20. R.A.F. target.
23. Skill.
24. Section of a wing.
27. Aeon.
28. Type of bomb.
29. Designation for Meridionali product.



WHERE AND WHAT?—Two more posers to test detailed knowledge. The problems last week were (left) the cockpit of a N.A. Harvard and (right) the motor nacelle of a Supermarine Walrus.

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